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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/622,422

07/18/2003

Daniel Worledge

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07/05/2005

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EXAMINER

TSAL, H JEY

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/622,422	Applicant(s) WORLEDGE ET AL.	
	Examiner H.Jey Tsai	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/14/05, 4/13/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-39 and 41-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-39, 41-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/14/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 31-39 and 41-43 are rejected under 35 U.S.C. § 102(e) as being anticipated by Grynkewich et al. 2004/0211749, previously applied.

Grynkewich et al. teaches a resistive element (a magnetoresistive element, para. 1-3, 14) for use in a semiconductor device (para. 11), the resistive element comprising:

a bottom metal layer of TaN/Ta 14/16/20 (a base layer as a bottom electrode with non-magnetic metal) positioned over a metal contact, fig. 1-8 and para.12-14,

an insulating barrier layer of AlOx 22 (as a current tunneling barrier layer formed from an insulating layer of oxidized aluminum layer, with thickness of 5-500 angstroms which is 0.5-50 nm, meeting claim 33, 34, 43), positioned over the bottom metal layer 14/16/20, para. 14, fig. 1,

a non-magnetic metal layer, such as non-magnetic layer 24/32 such as aluminum (para. 14, lines 19-22, para. 15), positioned over and in direct contact with the insulating barrier layer 22, para. 14-16 and fig. 1-2,

a layer of Ta 16 (as protected cap layer over TaN 14) positioned over the non-magnetic metal base layer 14 of TaN, para. 12-13, (meeting claim 18, 20, 21, 27, 28),

a cap layer 26 of TaN over non-magnetic metal layer 24/32, fig. 2 and para.16,

a smoothing layer 16 of Ta, para. 13,

bottom layer 14 of TaN as a bottom electrode, para. 12,
a layer of CoFe 20 (as seed layer, meeting claims 22, 26) positioned over the
bottom metal layer 14/16, para. 14,
a smoothing layer of Ta 26 upon the barrier layer and as a top electrode, fig. 1,
para. 16.

Drawings

The drawings were received on Feb. 14, 2005. These drawings are
acknowledged.

Conclusions

Applicant's arguments filed Feb. 14, 2005 and April 13, 2005 have been fully
considered but they are not persuasive. Because Grynkewich et al. clearly teaches a
semiconductor device includes a resistive element and a semiconductor substrate in
para. 12, lines 18+. Grynkewich et al. also clearly a bottom metal layer, an insulating
barrier layer over the bottom metal layer and a non-magnetic metal layer over in direct
contact with the insulating barrier layer and resistive element has a thickness of 0.5 to
50 nanometers as set forth above.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time
policy as set forth in 37 CFR 1.136(a).

Art Unit: 2812

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry of a general nature or clerical matters or relating to the status of this application or proceeding should be directed to the Group customer service whose telephone number is (703) 308-4357.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (571) 272-1684. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679.

The fax phone number for this Group is (703) 872-9306.

Hjt

6/1/05



H. Jey Tsai
Primary Examiner
Patent Examining Group 2800